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TITLE: Composite panel structure

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INVENTOR-INFORMATION:

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US-CL-CURRENT: 428/73; 156/286, 428/116, 428/117, 428/118

CLAIMS:

What is claimed is:

1. A composite panel having:

- (1) a first face comprising a first layer of cured polyester resin bonded to
- (2) a second layer of cured polyester resin having embedded therein a fabric of woven roving fiberglass bonded by said second layer of cured resin to one side of
- (3) a polypropylene core layer of thin wall, open cell, honeycomb structure, in turn bonded to
- (4) a second face comprising a third layer of cured polyester resin having embedded therein a fabric of woven roving fiberglass, said third layer of cured polyester resin bonding said second face to the second side of said polypropylene core layer, and
- (5) means to prevent resin from said second and third layers from penetrating through the cells of the honeycomb structure core.

2. A composite panel as claimed in claim 1 in which the means to prevent resin from said second and third layers from penetrating the cells of the honeycomb structure is a thin mat of non-woven, randomly oriented fiberglass adhered to the open ends of the cells on each face of the honeycomb structure.

3. A composite panel as claimed in claim 1 in which the means to prevent resin from said second and third layers from penetrating the cells of the honeycomb is a filling of low density foamed plastic in the cells.

4. A panel as claimed in claim 2, and further having around the perimeter of the core layer, between the second and third layers of cured, polyester resin, edge strips of wood having substantially the same thickness as the honeycomb structure.

5. A panel as claimed in claim 4 in which the strips of wood are between two and five inches in width.

6. A panel as claimed in claim 3 and further having around the perimeter of the core layer, between the second and third layers of cured polyester resin, edge strips of wood having substantially the same thickness as the honeycomb structure.

7. A panel as claimed in claim 6 in which the strips of wood are between two and five

inches in width.

8. A panel as claimed in claim 3 in which the foamed plastic in the cells is foamed polyurethane having a density in the range of 1.7 to 2.1 lb/cuft.

9. A panel as claimed in claim 3 in which the foamed plastic is foamed polystyrene.

10. A method of manufacturing a composite panel which comprises:

(1) forming a thin continuous first layer of curable liquid unsaturated polyester gel coat resin on the top of a flat smooth, substantially level mold;

(2) Curing said first layer to a hard outer first facing for the composite panel;

(3) forming a second continuous and thicker layer of a second curable liquid unsaturated polyester resin on top of the total area of said first layer;

(4) embedding a first continuous fabric layer of woven roving fiberglass in said second layer of liquid resin to cover the area of said first facing;

(5) laying abutting sections of a thin wall, open cell, polypropylene honeycomb structure in said second layer of liquid resin on top of said first fabric layer to cover the area thereof, said sections of honeycomb structure having means on each open cell face to prevent penetration of said second liquid resin through said open cells;

(6) covering the mold with a flexible air impervious resin film of polyethylene or polyvinyl chloride non-adherent to cured polyester resin to form an airtight cover over the mold;

(7) evacuating air from the mold under the said cover while said second layer of polyester resin is cured;

(8) removing the said cover from said mold;

(9) forming a third continuous layer of said second curable liquid unsaturated polyester resin on top of the upper face of the honeycomb structures;

(10) embedding a second continuous fabric layer of woven roving fiberglass in said third layer of liquid resin to cover the area thereof;

(11) curing said third layer of resin, then removing the composite panel from the mold.

11. A method as claimed in claim 10 in which the means, on each open cell face of said sections of honeycomb structure, to prevent penetration of said second liquid resin through said open cells, is a thin mat of non-woven, randomly oriented fiberglass adhered to the open ends of the open cells.

12. A method as claimed in claim 10 in which the means on each open cell face of said sections of honeycomb structure, to prevent penetration of said second liquid resin through said cells, is a filling of low density foamed plastic with which the cells have been filled prior to laying the sections of honeycomb on said second liquid resin.